WHAT IS CLAIMED IS:

1. A peptide comprising selenocysteine, wherein the peptide is fused to a surface protein of an amplifiable genetic particle.

2. The peptide of claim 1, wherein the amplifiable genetic particle is selected from the group consisting of phage, polysomes, virus, cells and spore.

3. The peptide of claim 1, wherein the peptide is fused to the surface protein.

4. A surface protein of an amplifiable genetic particle into which has been incorporated a selenocysteine residue.

5. The peptide of claim 4, wherein the amplifiable genetic particle is selected from the group consisting of phage, polysomes, virus, cells and spore.

6. A method for incorporating a selenocysteine residue on the surface of an amplifiable genetic particle comprising the steps of:

(a) incorporating a codon selected from the group consisting of TGA and UGA into a predetermined position of a nucleic acid molecule which codes for a peptide located on the surface of an amplifiable genetic particle; and

(b) incorporating a selenocysteine insertion sequence at a predetermined position downstream from the codon to form a selenocysteine expression cassette.

7. The method of claim 6, wherein the selenocysteine insertion sequence is obtainable from the group consisting of eubacteria, eukarya and archaea.

8. The method of claim 6, wherein the nucleic acid molecule comprising the selenocysteine expression cassette is genetically fused to a nucleic acid molecule coding for a surface peptide of an amplifiable genetic particle.

9. The method of claim 6, wherein the nucleic acid molecule comprising the selenocysteine expression cassette is

(a) expressed to produce a selenopeptide; and

(b) ligated to the surface of an amplifiable genetic particle.

10. A method of modifying a selenocysteine containing peptide on the surface of an amplifiable genetic particle comprising chemical derivitization of a selenol group of the selenocysteine containing peptide.

11. The method of claim 10, wherein chemical derivitization comprises a nucleophilic substitution reaction.

12. The method of claim 10, wherein chemical derivitization comprises an oxidation reaction.

13. The method of claim 10, wherein chemical derivitization comprises a metal coordination reaction.

14. The method of claim 10, wherein chemical derivitization comprises introduction of a chemical functionality selected from the group consisting of enzyme substrates, enzyme cofactors, enzyme inhibitors, and cytotoxic agents.

15. A randomized peptide library comprising a fixed selenocysteine residue flanked on at least one side by a randomized amino acid on the surface of an amplifiable genetic particle.

16. A method of selecting for novel ligands comprising the steps of:

(a) chemical derivitization of a selenocysteine residue in a random peptide library displayed on the surface of an unamplifiable genetic particle to form a chemically modified peptide library;

(b) reacting the chemically modified peptide library with a target molecule;

(c) removing unbound particles;

(d) eluting bound particles; and

(e) identifying peptide sequence displayed on the eluted bound particles.

17. A method for selecting for a predetermined enzyme activity comprising the steps of:

(a) displaying a selenopeptide on the surface of an amplifiable genetic particle;

(b) displaying a library of enzyme variants on the amplifiable genetic particle of step (a);

(c) chemically derivitizing the selenopeptide from step (a) with a predetermined substrate;

(d) reacting the chemically derivitized particles from step (c) with an affinity matrix specific for a product corresponding to the predetermined enzyme activity other than the substrate of the enzyme;

(e) removing unbound particles;

(f) eluting bound particles; and

(g) identifying enzymes displayed on the eluted bound particles.

18. A method of identifying required DNA sequence elements for incorporation of selenocysteine into peptides comprising the steps of:

(a) fusing a selenocysteine expression cassette to a surface peptide of an amplifiable genetic particle, whereby expression of the surface peptide is dependent upon incorporating a selenocysteine residue;

(b) forming a library of sequence variants of the selenocysteine expression cassette; and

(c) selection for particles which are genetically amplifiable.

19. A structurally constrained peptide library displayed on the surface of an amplifiable genetic particle comprising one or more randomized amino acid residues flanked by a cysteine residue on one side and a selenocysteine residue on the other side, said constraint resulting from a spontaneously formed selenosulfide cross-link.

20. A method for discovery of structurally constrained ligands for a target molecule comprising the following steps:

(a) reacting a structurally constrained peptide library displayed on the surface of an amplifiable genetic particle, comprising one or more randomized amino acid residues flanked by a cysteine residue on one side and a selenocysteine residue on the other side, with a target molecule;

(b) removing unbound particles;

(c) eluting bound particles; and

(d) identifying peptide sequence displayed on the eluted bound particles.